

preserve the crocodile but also act as a buffer to save agricultural lands lying to their west from the effect of the severe cyclonic storms which periodically ravage the area.

- (2) The Bhitarkanika Island and the surrounding areas should be declared a sanctuary and left inviolate so that the crocodile's breeding areas are undisturbed.
- (3) Trade in any form in crocodile skin should be prohibited by the State and Central Governments.

ACKNOWLEDGEMENTS

We are grateful for the financial support from World Wildlife Fund, India, with which the survey was undertaken.

We are indebted to Shri Sailendra Narayan Bhanja Deo, Raja of Kanika, whose assistance at every stage made the survey possible. We are grateful to the Chief Conservator of Forests, Orissa and the many members of the staff of the Forest Department who generously assisted us in many ways during the survey.

BOMBAY NATURAL HISTORY SOCIETY,
HORNBILL HOUSE,
SHAHID BHAGAT SINGH ROAD,
BOMBAY-400 023,

J. C. DANIEL
S. A. HUSSAIN

May 5, 1973.

10. NOTE ON *CRISTICEPS HALEI* DAY, 1888 (PISCES : CLINIDAE) A JUNIOR SYNONYM OF *SPRINGERATUS* *XANTHOSOMA* (BLEEKER), 1857

Bleeker (1857) first described *Clinus xanthosoma* from Java. Later Günther (1861), Herre (1936, 1939, 1953) and de Beaufort (1951) described it as *Cristiceps xanthosoma* from East Indies and Philippines. Day (1888) recorded a new clinid fish *Cristiceps halei* from Colombo. Since Day (1889) *C. halei* has not been recorded and the type specimen of the species is also not traceable. Shen (1971) recorded it from Philippine and Formosa and created a new genus *Springeratus* for *Clinus xanthosoma* Bleeker.

While collecting shore fishes from Shingle island (Gulf of Mannar), very near to the type locality of *Cristiceps halei* Day, one specimen of *Springeratus xanthosoma* (Bleeker) was obtained. The live specimen was deep orange with three rows of blue spots on the body and a blue blotch over the pectoral peduncle. But this coloration fades in formalin and the preserved specimens are uniformly yellow. Probably this may be the reason for the confusion in the identity of the species.

Cristiceps halei Day and *Springeratus xanthosoma* (Bleeker) from Shingle island differ slightly in fin formula (*C. halei* : D. III, XXVII, 4, P. 13 ; V. I/2 ; C. 14 ; A. II, 19, *S. xanthosoma* : D. III, XXVI, 6, P. 11-13 ; V. I, 2 ; C. 13 ; A. II, 20) and in coloration (no white marking in *S. xanthosoma*). But these variations are within the range for this species which has a wide distribution from Philippines to Indian coast. However, *Cristiceps halei* Day is not a valid species and is here considered as a junior synonym of *Springeratus xanthosoma* (Bleeker).

As it is the first record of this species from the Indian coast since Day (1889) and as there are some variations, a short descriptions is given.

Family : CLINIDAE

***Springeratus xanthosoma* (Bleeker)**

(Fig. I, A)

Clinus xanthosoma Bleeker, *Nat. Tijds Ned.-Ind.*, 13 : 340, 1857 ; Java.

Cristiceps xanthosoma Gunther, *Cat. Fish. Br. Mus.* 3 : 273, 1871 (compiled). Herre, *Philippine J. Sci.* 70 : 321, 1939 ; Luzon. Weber and de Beaufort, *Fish. Indo-Aust. Archipel.* 9 : 390-391, 1951 ; Java. Herre. *Check-list of Philippine fishes*, 788, 1953 ; Luzon.

Cristiceps halei Day, *Fishes of India*, Supplement : 799, 1888 (Colombo). *Fauna of British India*, Fishes, 2 : 326, 1889.

Springeratus xanthosoma Shih-Chieh Shen, *Rep. Inst. Fish. Biol. Minis. Econ. Affairs Natn. Taiwan Univ.*, Vol. 11, No. 4 : 16-39, 1971.

D. III, XXVI, 6 : A. II, 20 ; P. 11-12 ; C. 13 ; V. 3 ; Ltr. 8/1/38.

Head 23·8 in standard length, 24·1 in total length ; depth 23·8 in standard length and 24·1 in total length. In head length eye 30·0, snout 25·9, first dorsal spine 70·0, second dorsal fin height 30·0, third dorsal fin 50·0, pectoral fin length 70·0, ventral fin 65·0, caudal peduncle 45·0 ; all measurements in per cent.

Mouth upturned, cleft of mouth in line with upper margin of eye ; preopercle with three flat spines, opercle smooth ; gill membrane free from isthmus ; scales cycloid, minute ; cheeks and opercle devoid of scales ; first dorsal fin originates above preopercle, first and second

spines long, third spine short and not connected with second dorsal fin which is confluent with third dorsal ; last ray of third dorsal attached to caudal peduncle ; anal fin free from caudal peduncle ; an anteriorly curved intromittent organ with a stout base and pointed tip just posterior to anus (Fig. I, D) ; caudal fin emarginate, caudal and pectoral fin rays not divided ; lateral line originates above opercle, curves below sixth spine of second dorsal fin and terminates on caudal peduncle with 25 tubules ; anterior tubules with double pores and posterior ones with single pore ; nasal opening tubular, nasal cirri divided at tip ; orbital cirri flat, tip divided, 0.75 in eye (Fig. I, B) upper and lower jaws stout ; premaxillary teeth minute, 2-3 rows ; vomerine teeth minute, in two patches on each sides ; mandible with 2-3 rows of acicular teeth (Fig. I, C) ; maxillary membrane present ; gill rakers ten, short, stumpy, with minute simple spines on each side ; only one lower arm of gill arches.

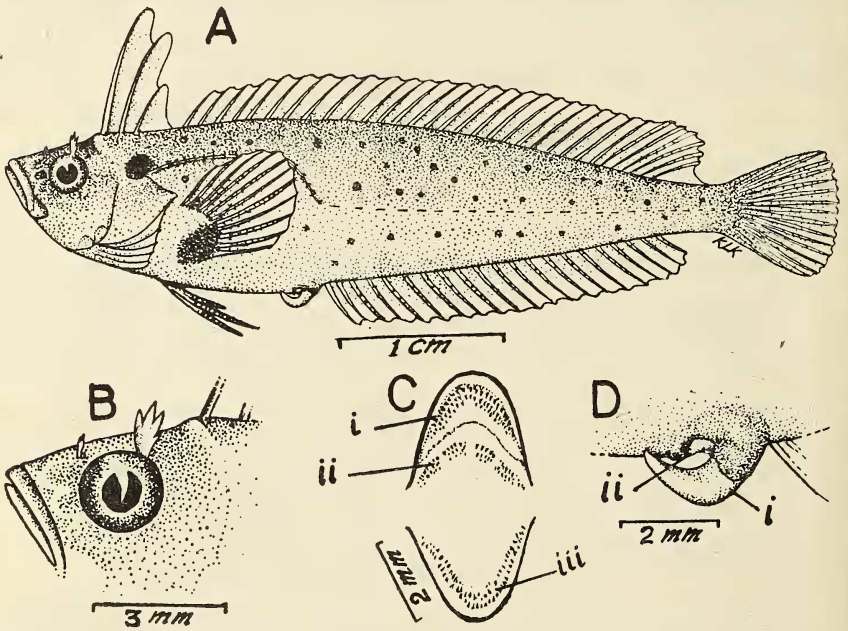


Fig. 1. A. *Springeratus xanthosoma* (Bleeker) CMFRI. No. 119/636 ; total length 49 mm. ; male ; Shingle island (Gulf of Mannar).

- B. Enlarged view of upper part of head showing nasal and orbital cirri.
- C. Dentition : (i) Maxillary teeth, (ii) Vomerine teeth, (iii) Mandibular teeth.
- D. Vent region : (i) Intromittant organ, (ii) Vent.

Deep orange mottled with three rows of blue spots, pectoral peduncle and upper corner of opercle with deep red blotches ; all this colour fades in formalin and the preserved specimen appears yellow.

Habitat : In coral stones and sea weeds along the shore.

Distribution : Philippines, Java, Ceylon and south-east coast of India (Gulf of Mannar).

Material : C.M.F.R.I./F. No. 119/636 ; Total length 49 mm ; male ; Shingle Island, (Gulf of Mannar) ; 24-xii-69.

ACKNOWLEDGEMENTS

I am thankful to Dr. S. Z. Qasim, Director and Dr. R. V. Nair, Deputy Director, Central Marine Fisheries Research Institute, Mandapam Camp, for going through the paper and offering their comments. My thanks are also due to Dr. Shih-Chieh Shen of National Taiwan University and Dr. Victor G. Springer of U.S. National Museum for identifying the specimen and expressing their views.

REGIONAL CENTRE OF CENTRAL
MARINE FISHERIES RESEARCH INSTITUTE,
MARINE FISHERIES POST,
MANDAPAM CAMP, TAMIL NADU,
July 27, 1971.

R. S. LAL MOHAN

REFERENCES

- BEAUFORT, L. F. DE (1951) : In : L. F. de Beaufort and W. M. Chapman. The fishes of the Indo-Australian Archipelago, 9 : 390-391, E. J. Brill, Leiden.
- BLEEKER, P. (1857) : Descriptions specierum piscium Javanesium. *Nat. Tijdsch. Ned. Ind.* 13 : 340-341.
- DAY, F. (1888) : A natural history of the fishes known to inhabit the seas and fresh waters of India, Burma and Ceylon. *Suppl. Fish. India*, pp. 779-816, London.
- (1889) : Fauna of British India. *Fishes* 2 : 326 (Fig. 106), London.
- GUNTHER, A. (1861) : Catalogue of the Acanthopterygian fishes in the collection of the British Museum. 3 ; 273, London.
- HERRE, A. W. (1936) : Note on the fishes in the Zoological museum of the Stanford University. V. New or rare Philippine fishes from the Herre 1933 expedition. *Phil. J. Sci.* 59(3) : 357-382.
- (1939) : Philippine blennis. *Philip. J. Fish.* 70(4) : 315-372.
- (1953) : Checklist of Philippine fishes. U.S. Govt. printing Office, Washington, D.C. pp. 1-788.
- SHEN, SHIH-CHIEH (1971) : Osteological study on *Springeratus xanthosoma* (Bleeker) from the Indo-Pacific region, exclusive of South Africa, Australia and New Zealand. *Rep. Inst. Fish. Biol. Minis. Econ. Affrs. Natn. Taiwan Univ.* 2(4) : 16-39.